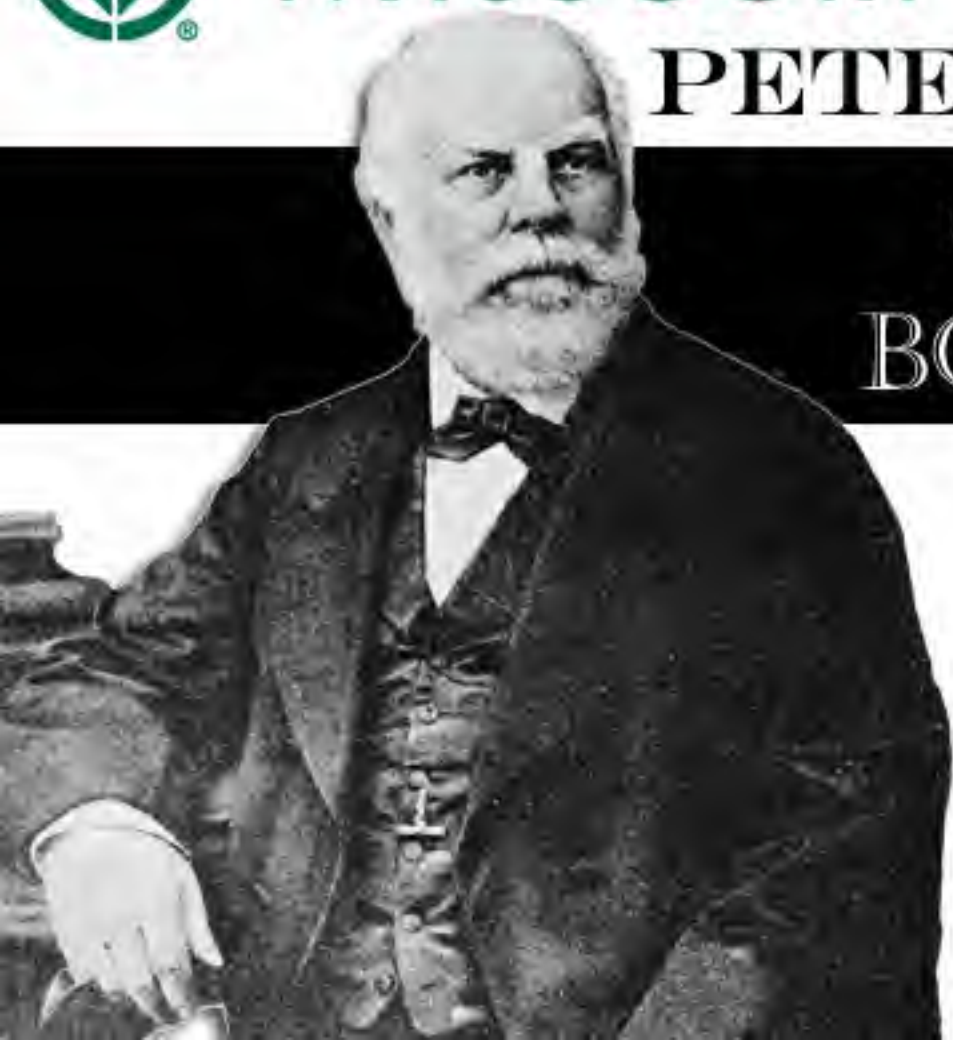


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BOTANICAL NOTEBOOKS



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4646

x60

leaves $\frac{1}{2}$ - $1\frac{1}{4}$ line long



base of leaf

Leaf
near tip



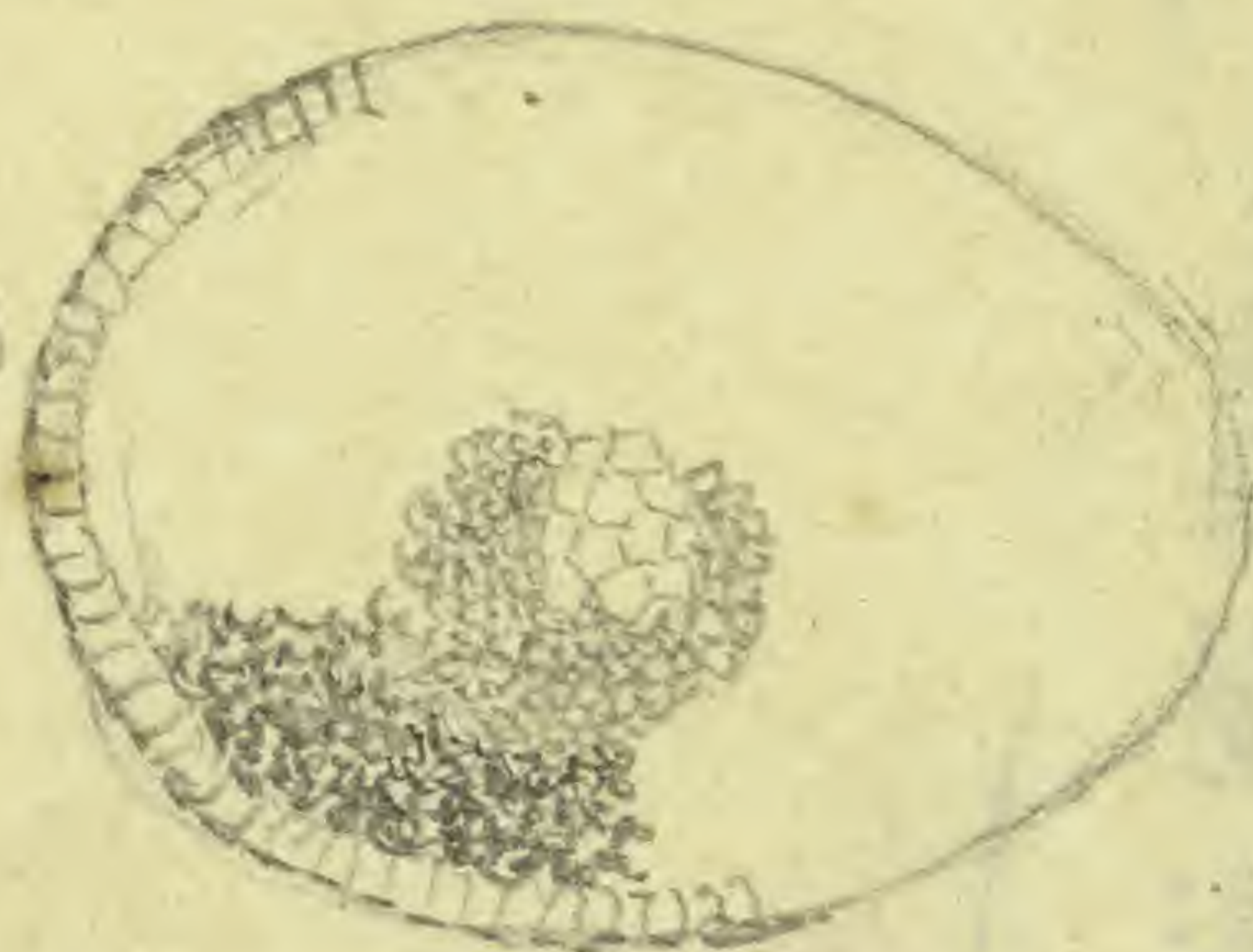
toward
tip



middle

Juncus, triflorus, Andryalys
Whish, Cal. Boland April 1866 May 24 1866

Stems $1\frac{1}{2}$ - 3 inches high



upper part



lower part



0
cm

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JONES & LETTICH
Druggists
 Cor. Fifth & Market Sts S^t. LOUIS^{MO}.

J. W. Ketchick & Co. 35 N. Main St.

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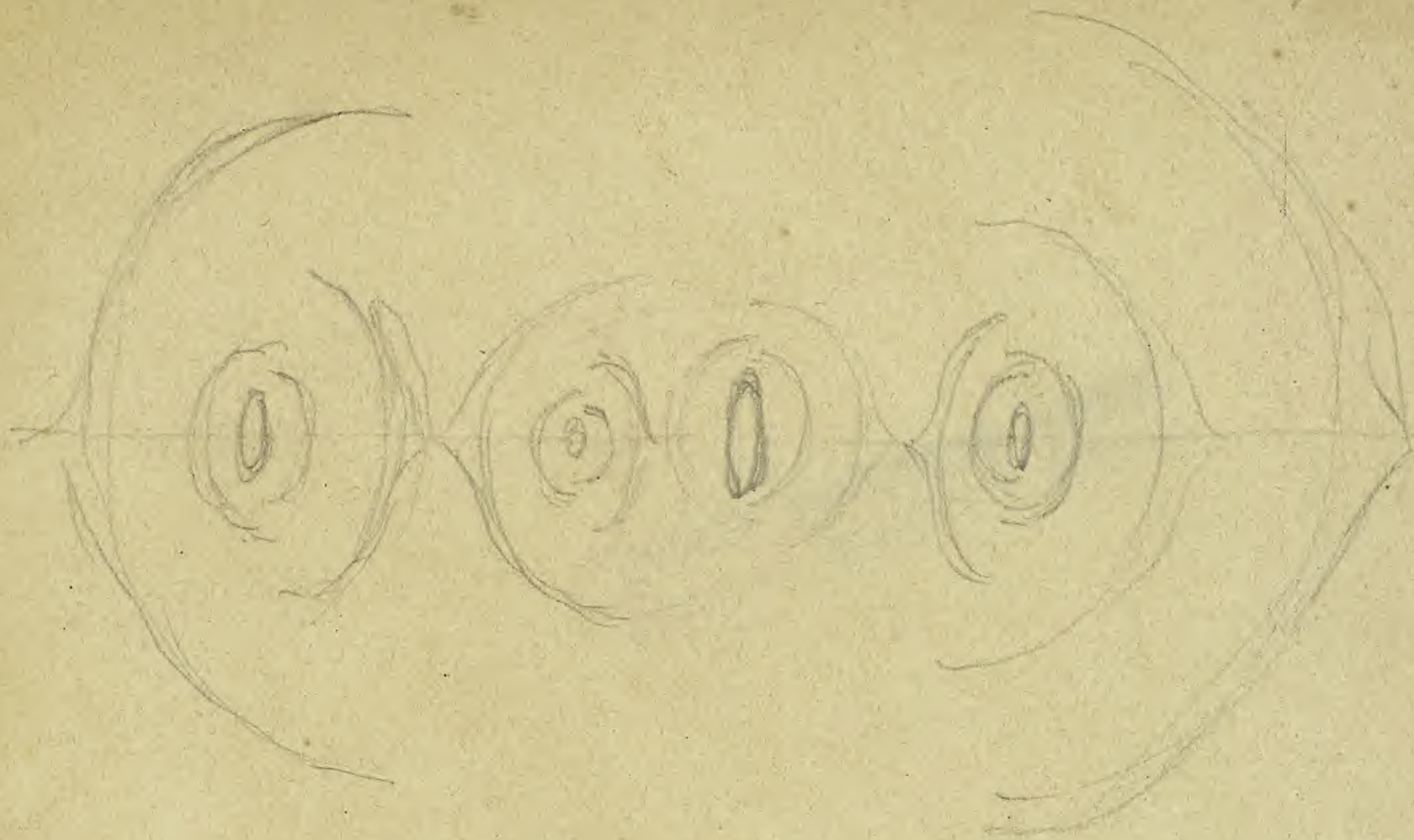


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D. biflorus *B. uniflorus* *D. uniflorus*

July 11 1866

Diagram of a small plant, partly imaginary.



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cm

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J. bifloris α . *capitellatus*
biflorus *trimeris*

July 11 1866

Diagram of a very small plant

from actual
observation



brown is lowest scale like leaf
green : leaves ; Dark green leaves of primary axis
red : bracts yellowish green " of secondary "
yellow : flowers over



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GARDEN
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ALEX. LEITCH

APOTHECARY & PHARMACEUTIST

COR. 4TH & OLIVE STS. ST. LOUIS

A very small specimen

main axis terminates in a flower stem
and has in this specimen 5 leaves
the lowest is short, scale like
and bears no axillary production
the following 3 have branches,
the upper most is sterile

The branch of the lower producing
leaf is larger than that of the upper
most smallest.

whether there are any basal
leaves in the axil of the branch and
main stem I have not ascertained

var. β . seems to have usually only one leaf at
base of branch



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seed x60



Herb norm 30.

x60



4 ribs visible



x150

Inula biformis var \pm *stylosus*

Aug 5 1866

Yosemite Valley Calif. Bolander July 8 1866

heads of 3-5 flowers



from a larger flower



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cm

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I. biflorus

Aug 6 1866

forma biflora 2-3 meris

Yosemite valley. Cal. Bolander July 1866

x 60



x 10



diandrous
5-sepaled flower



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T. toiformis
Imocleusa agnoides

2333 California State Survey

Sierra Nevada

S. Hillebrand

118

345-355

TRANS. OF THE ACAD. OF SCIENCE.

interrupted descent and ascent took place from January to December, we find in 1862 some interruptions in the steps of that ladder. The electricity in February, 1862, is about four degrees higher than that of January, April somewhat higher than March, and July is the lowest instead of September in 1861. These trifling irregularities may be accounted for by differences in temperature and relative humidity, and by a greater number of thunderstorms in 1862. January of 1862, for instance, was so unusually rainy, that its relative humidity too was unusually high, diminishing thus electricity. But the general features of distribution of electricity throughout the year are apparent in both years, and we may in that respect divide the twelve months of each year into two or three groups. Computing the months which give the highest electricity and those which give the lowest in each year, we find that in both years the months of January, February, March, April, November and December exhibit the highest, and the months of May, June, July, August, September and October the lowest electricity. The first group gives

The aggregate monthly mean of 71.5 degrees of electricity in 1861	
and 74.6	" " " 1862
While the second group gives 29.0	" " " 1861
and 25.7	" " " 1862

The second group prevailed therefore in 1861, and the 1st in 1862.



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WISLIZENUS—ATMOSPHERIC ELECTRICITY. 117

VI. The appearance of negative electricity was connected in

1861. No. times.	1862. No. times.	
30	32	with thunderstorms.
23	28	with rains without thunder and lightning.
20	4	with dry storms (without rain and without thunder and lightning).
4	3	with snow.
1	0	with fog.
78	67	

VII. Relation of Rain and Snow to Electricity.

Rain without thunderstorm was accompanied

By Positive Electricity.	By Negative Electricity.	By no Electricity.



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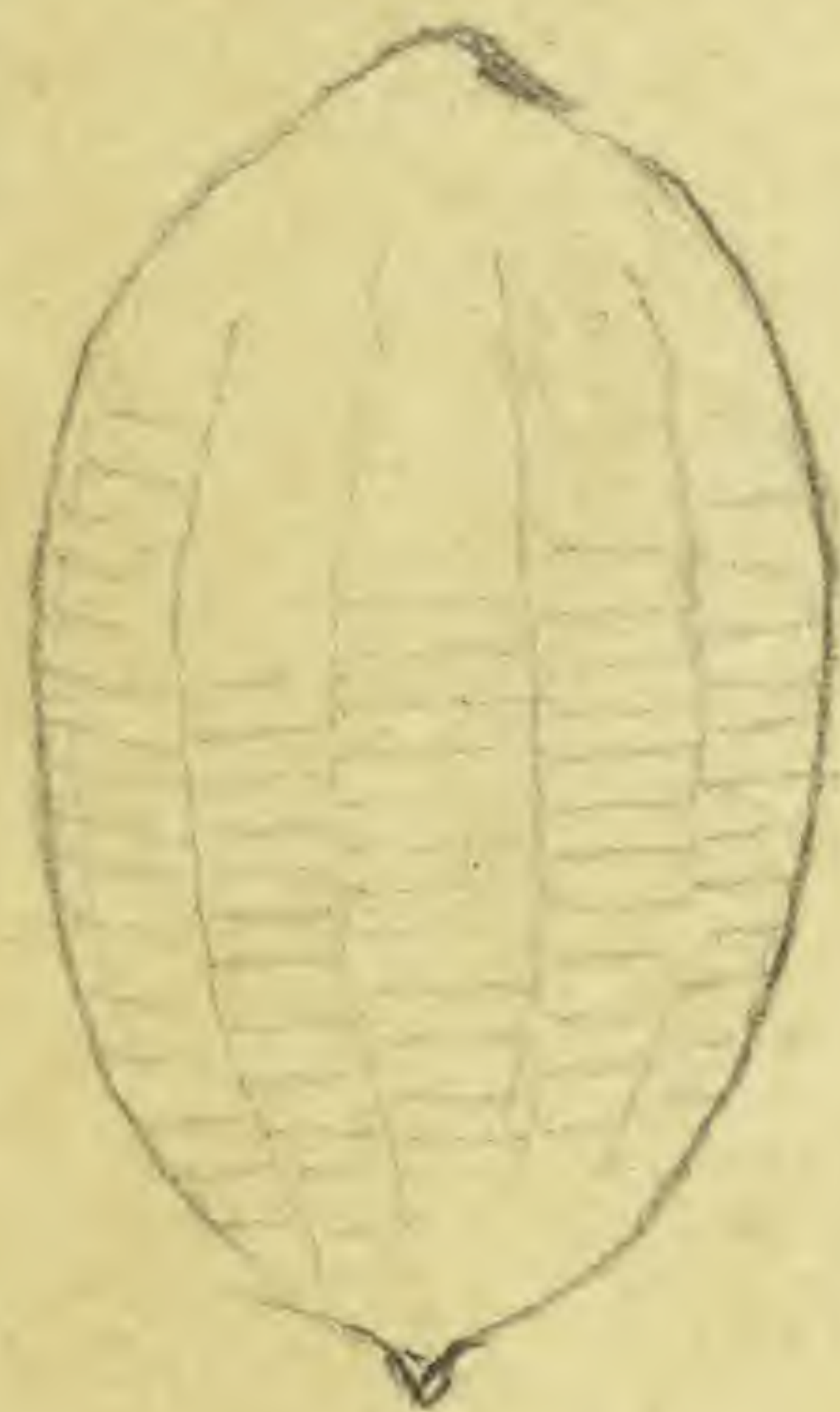
Junonia triiformis *brachystyles*
Whiah, Cal, Bolander April 1866

May 25 1866

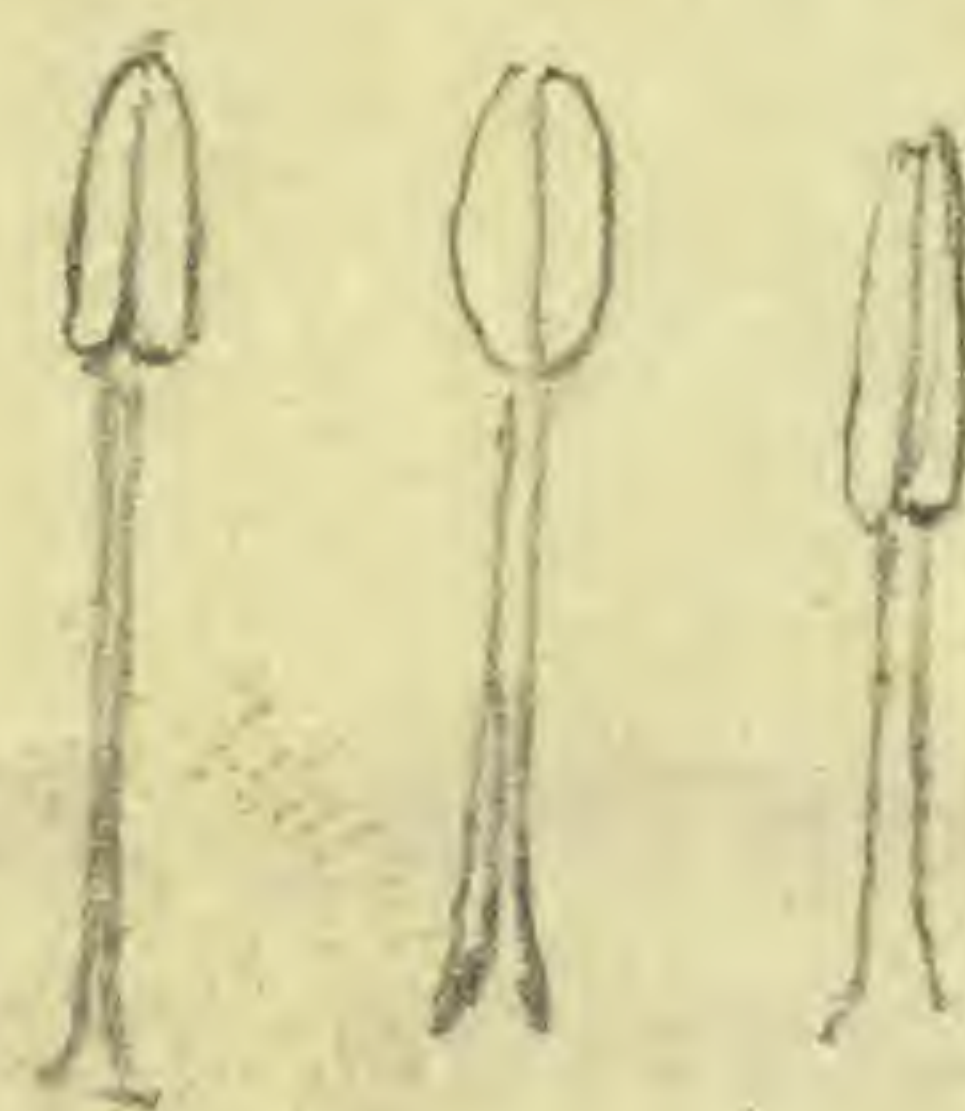
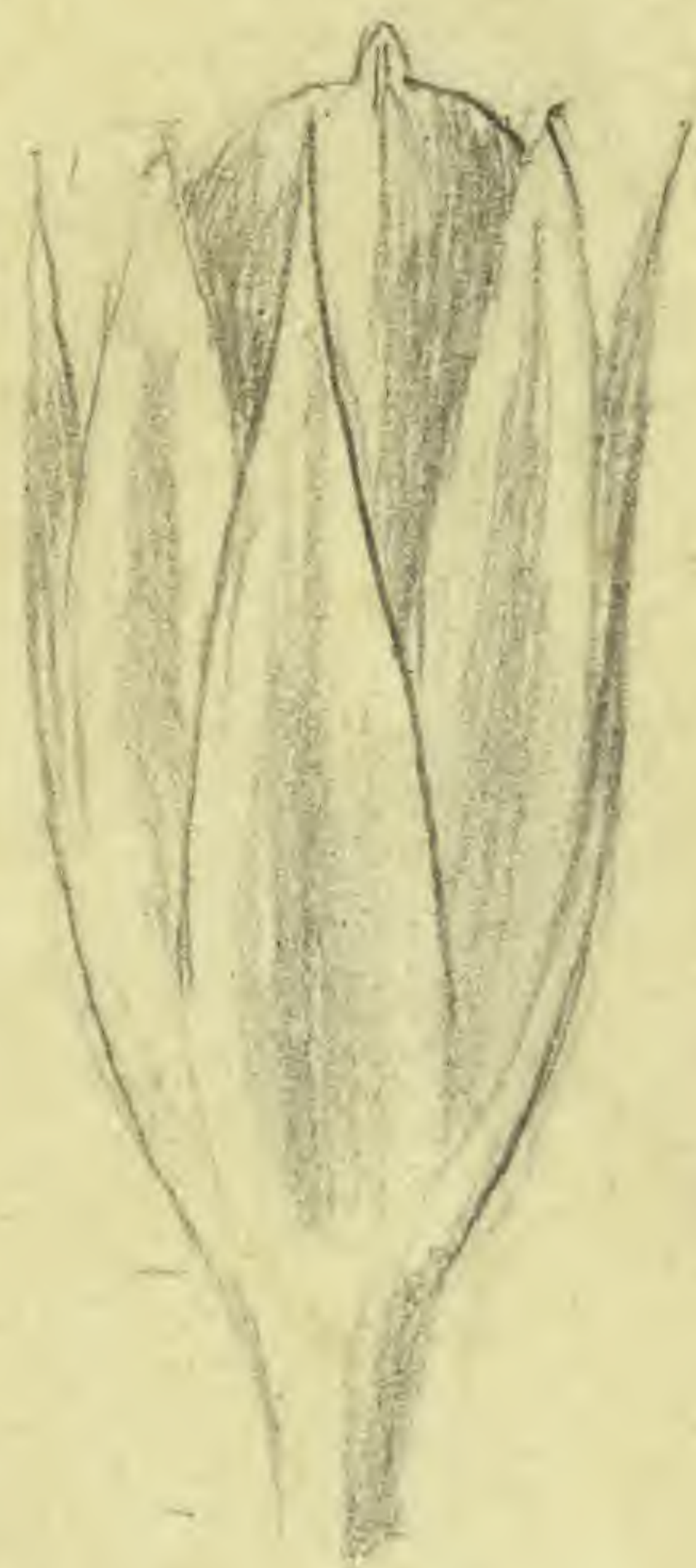
Hb. norm 31.

flowers usually 3 in a head

x60



seed unripe but apparently
full grown 4-5 ribs visible
very slight; 5 horizontal
striae equal in width to
the distance of one rib from
the next.



different stamens
from different flowers



Usual inflorescence, with
4 bracts and 3 flowers



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Juncus triflorus var. *diminutus*

Jan 4 1867

Upper Tule Lake River 9700 feet

Bolander

x60



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GEORGE ENGELMANN PAPERS
JAN 4 1867
BOLANDER



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Junonia trifasciata

Jan 21 1872

Silverson, Oregon

E. H. C. Jun. 1871

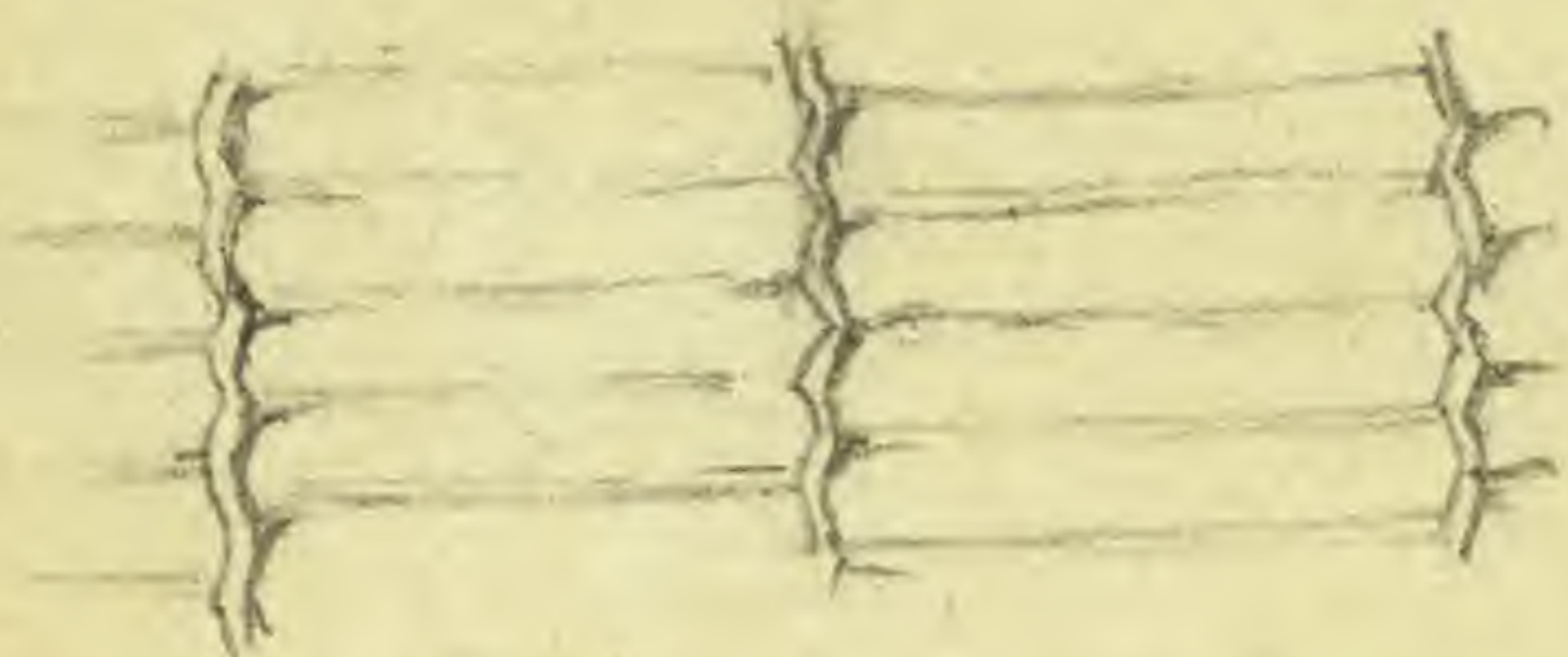
x60



x10



x10



x150

humilis
1-2 flowers
5-6 sepals
2-3 anthers
2 corollas
Seminabos legitimus



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Junonia triformis
var. *deficiens*

Jan 22 1872

Silverson, Oregon E Hall Jan 1871

x 60

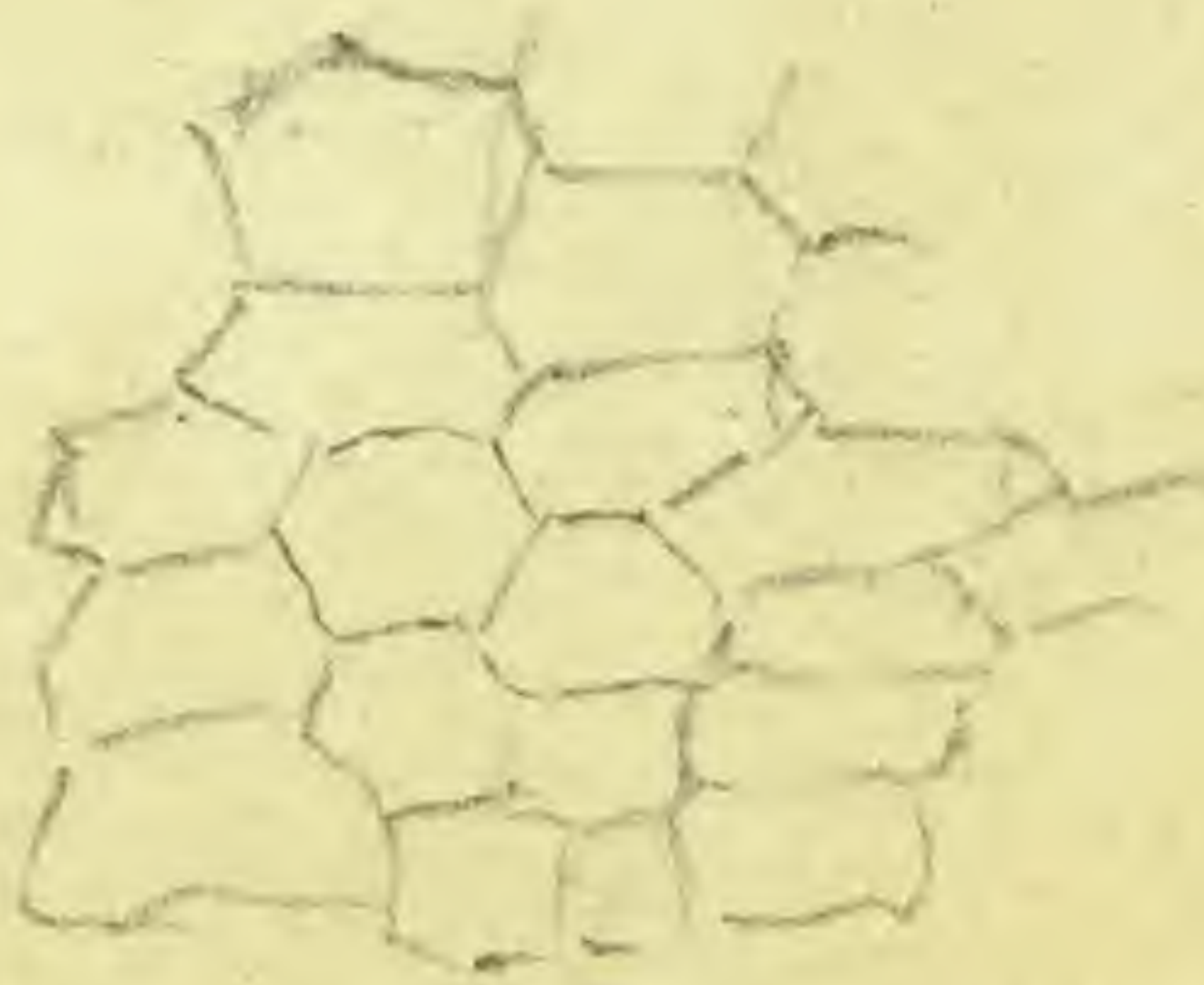
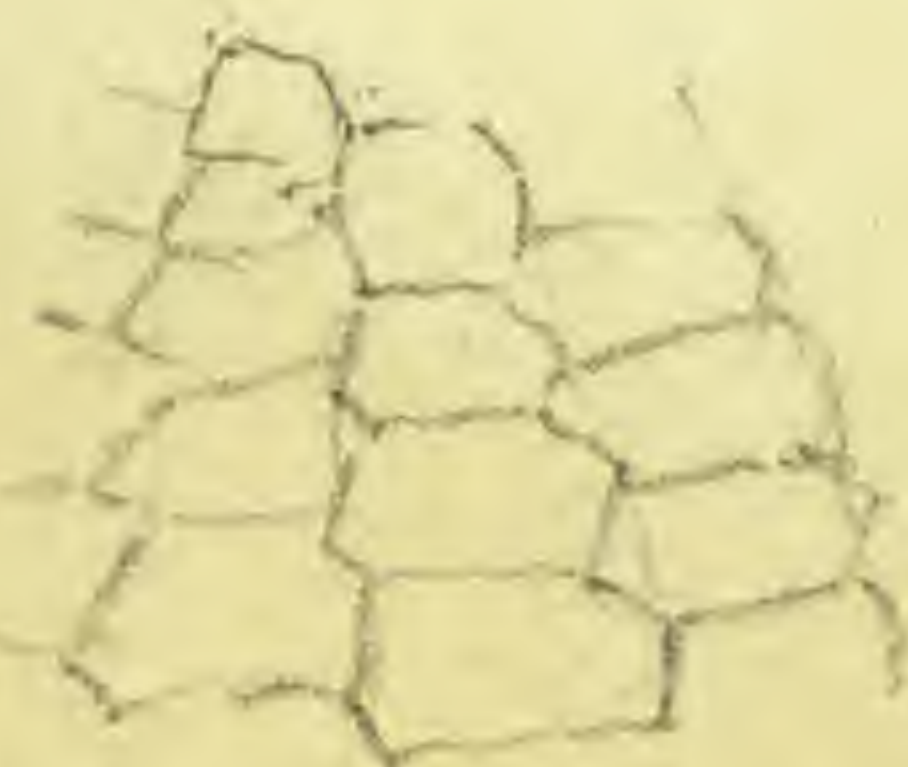
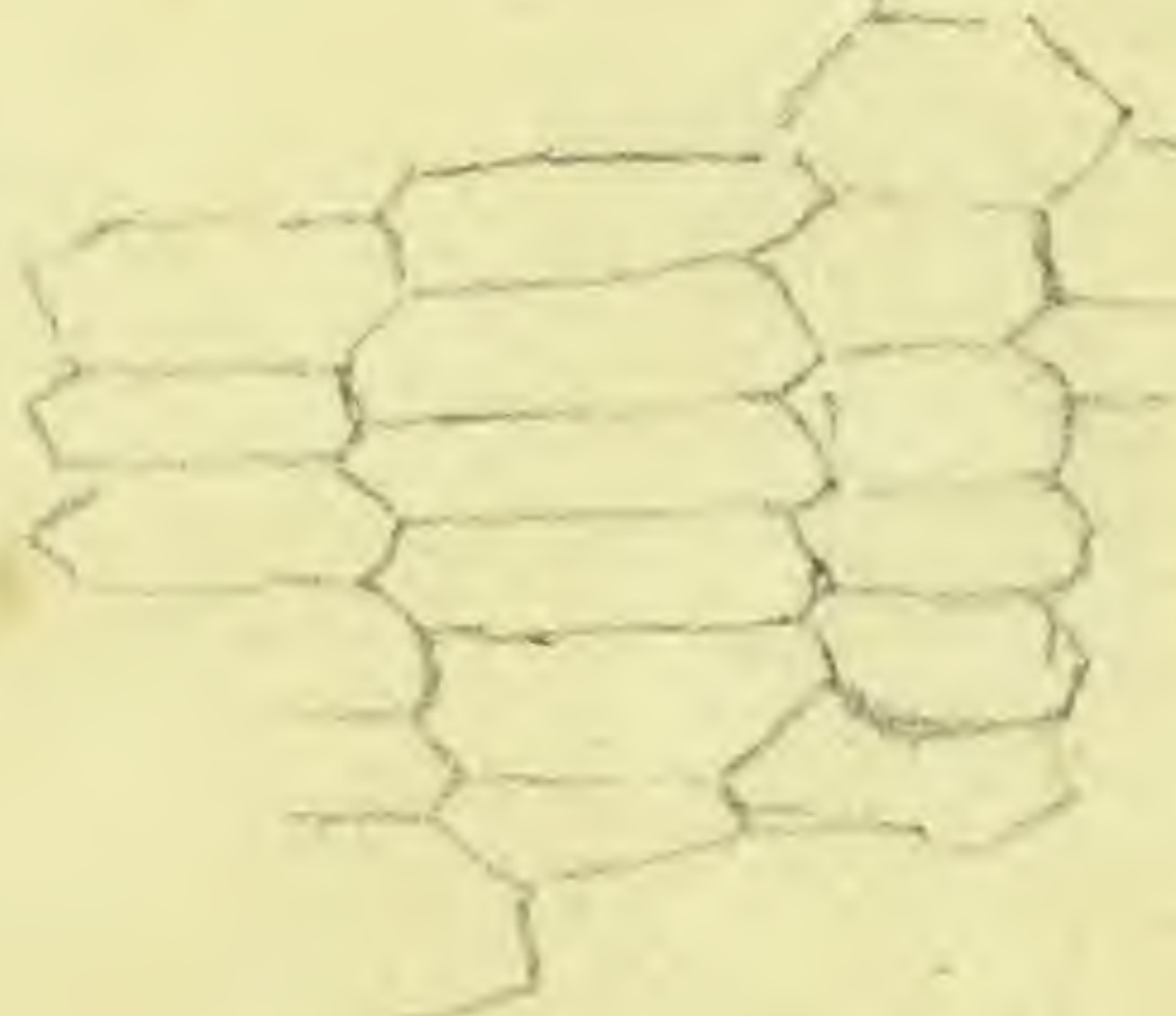
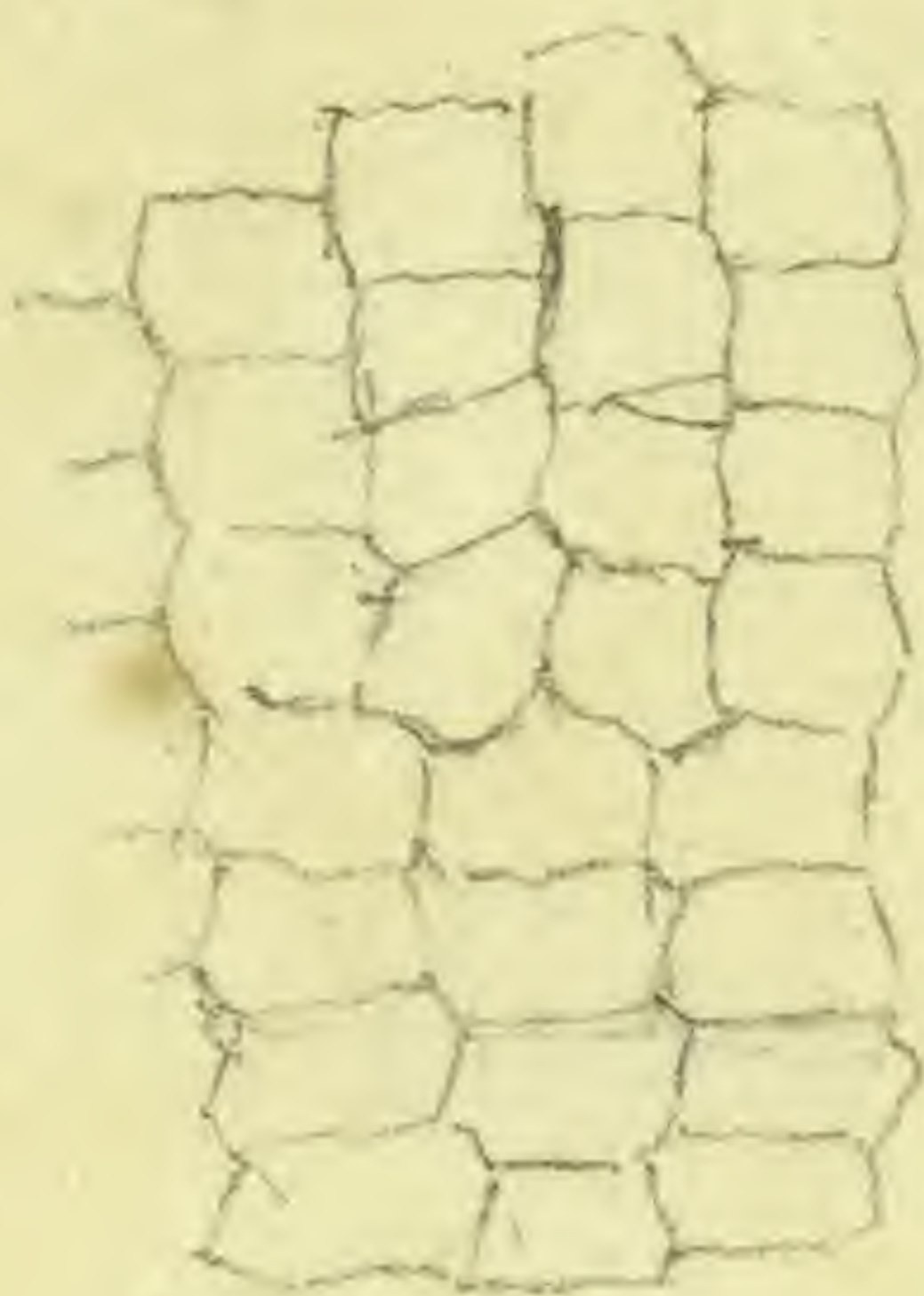


x 10



small flower
with exsert
(open) capsule

x 150



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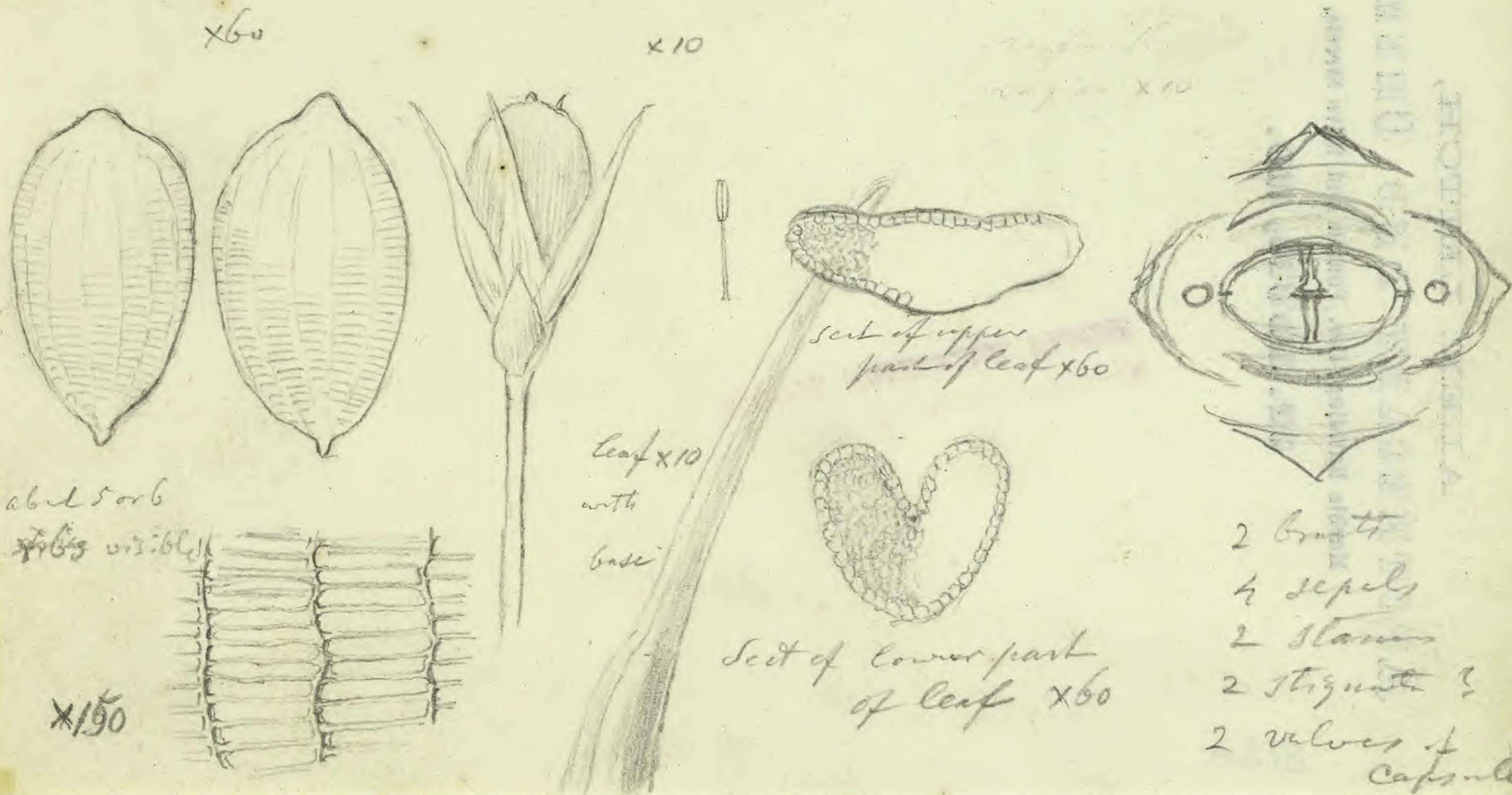
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2333 Calif. State Survey

Brewer m. 1866

March 2^d 1866

Sierra Nevada, Dr Hillebrand



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Juncus

Jan 4 1867

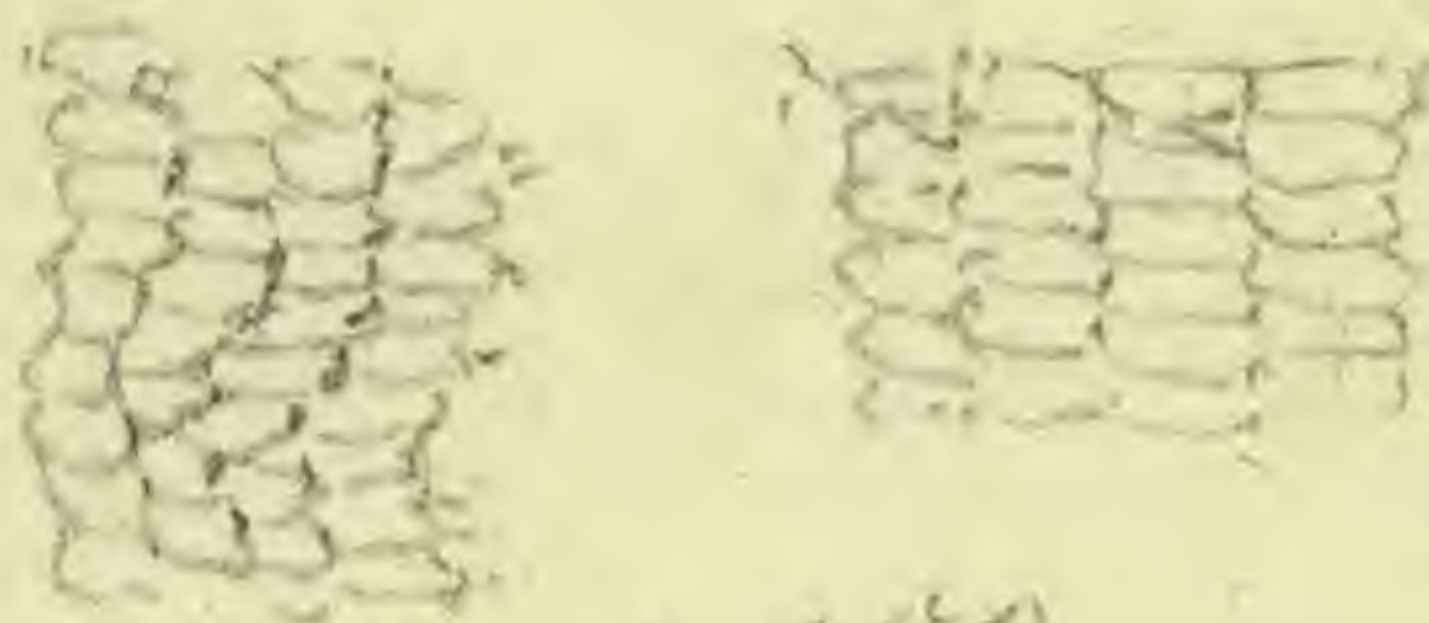
Upper Tule River, 9700 feet high

with *J. triflorus* H. Bolander 1866

x60



12-15 very indistinct ribs
with very fine cross striae
wrinkles rather than ribs



x150

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VOLUME 10, PART 1, PAGE 100

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J. Tasmannius Engel
Revis June p. note

344

114

TRANS. OF THE ACAD. OF SCIENCE.

Topaz in Utah. By HENRY ENGELMANN.

During my explorations in Utah as Geologist of the Expedition under Capt. J. H. Simpson, Top. Eng'rs. U. S. A., in 1858 and 1859, I observed some remarkably beautiful crystals of Topaz among some detritus of trachytic porphyry. They were perfectly colorless, transparent, sharply developed, and of great lustre. They were all short columnar. The largest of them measured scarcely one third of an inch in the direction of the basal cleavage, which was highly perfect. I observed ten modifications: all crystals exhibited (according to Prof. Rose's designation)

$\infty c : b : a$,	$\infty c : b : 2a$,	$c : \infty b : : \infty a$ 1,
4 $c : b : \infty a$,	2 $c : b : a$;	
most of them also	2 $c : b : \infty a$,	$c : b : a$;
a few only	2 $c : \infty b : a$,	and 4 (?) $c : b : a$.

As in none of the crystals were both ends developed, I could not ascertain whether they were hemihedral, as is most common with topaz. The hardness of the mineral is = 8. It is infusible before the blowpipe; and when strongly heated is coated with small blisters, but does not show any change of color. It exhibits the reactions of fluorine, alumina, and silic. No tests were made for other elements, nor were the crystals examined in regard to pyro-electricity and polarization of light. They exhibit double refraction quite plainly.



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SHUMARD—NEW PALÆOZOIC FOSSILS. 113

ELÆACRINUS KIRKWOODENSIS, n. sp.

Body very small, subglobose, a little longer than wide, flattened above and below. Basal pieces very gently concave, with their edges on a level with the plane of the under side. Radial pieces (fork pieces) reaching to the base and occupying more than four fifths the entire length of the body, narrow below and widest in the middle, sides gently arched. Interradial pieces subdeltoid, very prominent towards the apex, much longer than wide, obtusely angulated below, acutely angulated above, and notched on either side a short distance below the summit. Pseudo-ambulacral areas extending from base to summit, narrow, deeply impressed; sides nearly parallel; pore pieces amounting to about fifty in each field. A longitudinal fissure or slit extends from the central summit opening downwards, separating the pore pieces of one side from their fellows of the opposite for the distance of about one fifth the length of the field, thence their inner edges are united in the median line to the base. Pseudo-ambulacral spaces lanceolate, sloping gently from their edges to the sutures. Ovarial

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"*Juncus filamentosus*"

Oct 20 1865

Guam, Tasmania - Hb Gray

stem with single leaf
or none

Juncus agrostophyllus Z. Müll

J. filamentosus Meyer - Linn. 26. 245¹⁸⁵¹
(1853)

x 60



x 150



striated
length
ways!



x 10



Slipules of unequal
height, more or less so

Seeds of leaf, leaves
much shorter than
stem



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